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Circulating Leukocytes With Ingested Mucin in a Child With Hirschsprung's Disease

To the Editor: Circulating mucin is an uncommon occurrence in the blood, and occurs almost exclusively either in adults with disseminated adenocarcinoma or children with Wilms' tumor [1,2]. It is found extracellularly, resulting in either a falsely high or an erroneously low leukocyte count. Here we report a case with circulating leukocytes showing ingested mucin.

A newborn boy who presented with failure of meconium passage was suspected of having Hirschsprung's disease. On day 5, a barium enema examination was performed, at which time the bowel was accidentally perforated. An emergency laparatomy was performed to repair the perforation. He was put on total parenteral nutrition, and an elective colostomy was performed on day 9. Peripheral blood examination taken shortly after the second operation on day 9 showed a hemoglobin of 14.3 g/dl, platelet count of 176×10^9/L, and leukocyte count of 15.7×10^9/L with 60% neutrophils, 22% lymphocytes, and 18% monocytes. Many of the neutrophils and monocytes showed prominent cytoplasmic vacuoles. Some cells also contained round gray-blue inclusions in their cytoplasm (Fig. 1), which were demonstrated to be mucin by mucicarmine and periodic acid-Schiff (PAS) stains. No cryoglobulin was demonstrated. The patient had an uneventful recovery from the operation, and subsequent peripheral blood examination showed normalization of the leukocyte count and disappearance of the cytoplasmic inclusions. Similar cytoplasmic inclusions could not be found upon review of the peripheral blood smears taken prior to the second operation.

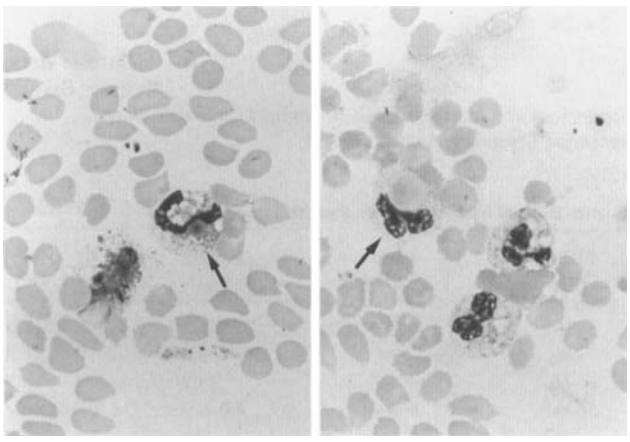

Fig. 1. Composite figure showing neutrophils with ingested mucin (arrow). (Giemsa stain, ×625.)

Cytoplasmic inclusions are sometimes a prominent feature in leukocytes in both reactive and neoplastic conditions. Döhle bodies are collections of rough endoplasmic reticulum characterized by small blue-gray cytoplasmic inclusions that are not uncommonly found in neutrophils in patients who are pregnant or infected [3]. They have, however, a characteristic wedge-shaped appearance and are often situated toward the periphery of the cells. In occasional patients with cryoglobulinemia, neutrophils can contain ingested cryoglobulin [3,4], the appearance of which is often indistinguishable from phagocytosed mucin. However, the cryoglobulin does not react with mucin stains such as mucicarmine and will disappear on warming of the specimen. In view of the clinical history and the temporal relationship with the perforation and repair of the bowel, we speculate that the mucin had gained access to the circulation due to accidental introduction of luminal mucin content or mucin-containing cells into the bloodstream during the operation, with subsequent removal of the mucin by the circulating phagocytes.

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Hemolytic Anemia Precipitated by Pregnancy in a Patient With Hereditary Elliptocytosis

To the Editor: Pregnancy complicated by hemolytic anemia due to hereditary elliptocytosis (HE) occurs extremely rarely [1–4]. Therefore, the maternal and fetal risks in these cases are poorly known. We describe a patient with HE in whom hemolysis was early precipitated and maintained by pregnancy.

A 21-year-old, gravida 1, para 0, white woman presented with weakness, headache, and pallor. She was found as having a 10-week gestation and severe anemia. Her mother and brother were always healthy, but her father, who also was allegedly healthy, was not available for hematologic study. The patient weighed 3,200 g at birth and had shown neonatal jaundice requiring exchange transfusion. Until 3 years of age, she had received blood transfusions, sometimes combined with steroids for anemia several times a year. Afterward she was asymptomatic until her pregnancy.

On physical examination, she had severe pallor and moderate hepatosplenomegaly. The peripheral smear showed many elliptocytes, anisocytosis, and polychromasia. She had reticulocytosis and a raised indirect bilirubin level. Hemoglobin electrophoresis and immunohematologic studies revealed no abnormalities. Following a bone marrow biopsy, hereditary elliptocytosis with hemolytic anemia was diagnosed.

Throughout the prenatal period, the hemoglobin level frequently dropped and jaundice emerged. In addition to iron and folate therapy, the patient